REMARKS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 17-42 are pending in the present application. Claims 17, 19-30 and 32-42 are amended, Claim 18 and 31 are canceled, and Claims 43-45 are added by the present amendment.

In the outstanding Office Action, Claims 17-20, 29-33, and 42 were rejected under 35 U.S.C. § 112, second paragraph, as indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Claims 17-42 were rejected under 35 U.S.C. § 103(a) as unpatentable over Shiraishi in view of Arai.

Regarding the rejection of Claims 17-20, 29-33, and 42 under § 112, second paragraph, Claims 17 and 30 are amended in light of the comments noted in the outstanding Office Action. Accordingly, it is respectfully requested the rejection be withdrawn.

Claims 17-42 were rejected under § 103(a) as unpatentable over Shiraishi in view of Arai. This rejection is respectfully traversed.

Amended Claim 17 is directed to a surface inspection method, which utilizes a surface inspection apparatus having a light source, an objective lens, an illumination switch-over member, a light detection member, and a rotatable disk-shaped plate. Further, amended Claim 17 incorporates the subject matter of canceled Claim 18. Thus, the illumination switchover member of amended Claim 17 includes a bright-field/dark-field illumination switchover slide, which slides in a direction perpendicular to both an optical axis of the collimate lens for refracting light from the light source and an optical axis of the objective lens, and along the sliding direction, a circular half-mirror portion for the bright-field illumination and a ring-shaped fully-reflective-mirror portion for the dark-field illumination are provided in parallel with each other, an inner portion of the ring-shaped fully-reflective-

mirror portion for the dark-field illumination being a light-pass portion, such that on a periphery of the objective lens, a ring-shaped dark-field illumination lens is provided, and the ring-shaped dark-field illumination lens is structurally configured such that a light reflected on the ring-shaped fully-reflective-mirror portion in a direction of the optical axis of the objective lens is applied from an oblique direction in order that there is a focus on the surface of the object to be measured. Amended Claim 30 contains similar features, but is drafted in means-plus-function terminology. Claims 19-29 and 32-41 depend directly or indirectly from Claims 17 and 30.

In a non-limiting example, Figures 1 and 2 of the present application illustrate a surface inspection apparatus 1 and an illumination switchover member 14. More particularly, Figures 1 and 2 illustrate: the bright-field/dark-field illumination switchover member 14, which slides in a direction perpendicular to both an optical axis of the collimate lens 22 for refracting light from the light source 11 and an optical axis of the objective lens 12; the circular half-mirror portion 23 for the bright-field illumination and the ring-shaped fully-reflective-mirror portion 24 for the dark-field illumination, which are arranged in parallel with one another; the inner portion 24A of the ring-shaped fully-reflective-mirror portion 24, which does not reflect light for dark-field illumination, and; the ring-shaped dark-field illumination lens 25 on the periphery of the objective lens 12, which refracts light reflected from the ring-shaped fully-reflective-mirror portion 24 in an oblique direction toward the surface of the object 2.

On the contrary, Shiraishi does not disclose the configuration described above (the outstanding Office Action cites Arai only for having a rotatable disc with holes of different sizes). For instance, Shiraishi does not disclose a means for switching between bright-field and dark-field illumination using a circular half-mirror portion 23 and a ringlike fully-reflective mirror portion 24, respectively. Further, Shiraishi does not disclose a ring-shaped

dark-field illumination lens 25 for refracting light in an oblique direction toward the surface of an object. Accordingly, it is respectfully requested that the rejection to Claims 17 and 30 be withdrawn.

Shiraishi also does not disclose the steps of new method claims 43-45. New Claim 43 is directed to a method for surface inspection having first steps for naked eye observation and second steps for preserving visual information. The first steps include reflecting polarized light off the surface of an object to be measured, observing an abnormal portion of the object with the naked eye at various angles, selecting the angle at which a difference from the normal position can be notably distinguished, and using the selected angle as the irradiation angle for the light applied to the object in the second steps. The second steps include choosing bright-field or dark-field illumination in accordance with the selected angle, passing the reflected light through an objective lens, passing the reflected light that is incident to the objective lens and parallel to its optical axis through an opening of variable size, and measuring the quantity of light passing through the opening via a light detection member.

The above method preserves objective visual information pertaining to a surface's condition. Such information includes unevenness in height, gloss, and color, as well as the appearance of weld lines, flow marks and stress whitening (page 1, lines 14-24). Conventional means of preserving visual information, e.g., photography, cannot capture the above visual information in a manner commensurate with that obtained by the naked eye (page 2, lines 2-13). One aspect of the present invention seeks to overcome this problem.

For instance, when an abnormal portion of an object's surface is measured using dark-field illumination, the irradiation angle (with respect to the optical axis of the objective lens) is selected on the basis of a naked eye observation (page 9, lines 18-22). More particularly, the object is first observed with the naked eye at varying angles. An angle distinguishable from the normal portion is selected, and this selected angle is used as the irradiation angle for

the light applied to the object (page 9, line 25 – page 10, line 1). Consequently, the conditions recorded by the light detection member are the same as those observed by the naked eye. Thus, a superior correlation with the naked eye observation is obtained (page 10, lines 1-4).

Further, in dark-field illumination, the ring-shaped dark-field illumination lens 25 irradiates an object from all directions. In doing so, measurement errors and the scattering of data due to irradiation differences are avoided. In addition, the light detection member obtains a superior correlation with the naked eye observation because the general directivity of the surface and the multi-directional nature of naked eye observation are compensated (page 9, lines 2-17).

On the contrary, Shiraishi does not disclose the use of naked eye observations to achieve a superior preservation of visual information. Shiraishi discloses an invention relating to a technique of detecting a mask pattern provided on a photosensitive substrate (col. 1, lines 10-12). Accordingly, it is respectfully submitted method provided by new Claims 43-45 are distinguishable from Shiraishi and allowable.

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance, and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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